

the necessity for some type of bypass graft. An autogenous saphenous vein graft or Gore-Tex synthetic graft can be used to bridge the common to internal carotid defect if there is an adequate internal carotid stump. In cases of removal of the internal carotid artery at the skull base or in cases of neck infections, autogenous vessels are used to complete an extra-intracranial anastomosis from the common carotid or subclavian artery to the middle cerebral artery. These grafts may then be covered with myocutaneous flaps to protect them from contamination or, in the case of a saphenous vein graft, from occlusion.

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## Otolaryngologic Manifestations of Acquired Immunodeficiency Syndrome

THE INCIDENCE of acquired immunodeficiency syndrome (AIDS) is increasing at a near-epidemic rate, with the number of cases doubling every six months. As of January 1984 the number of reported cases was 3,308 worldwide with a three-year death rate of nearly 100%. The syndrome is essentially the dermal malignant lesion, Kaposi's sarcoma, or life-threatening opportunistic infections, or both, in previously healthy homosexual men, Haitians, intravenous drug abusers and blood product recipients without other reasons for immune suppression. The infections are usually fungal, protozoal, viral or mycobacterial in which the T-arm of the immune system is the critical factor. The number of helper cells is reduced, inverting the helper-to-suppressor cell ratio to a mean of 0.4 (normal, 1.8 to 2.4).

Patients often have otolaryngologic and head and neck manifestations. In a retrospective study of 399 patients with AIDS seen at hospitals affiliated with the University of California, San Francisco, 41% had signs and symptoms referable to the head and neck as a chief complaint or as a finding on initial evaluation. Of these signs, 35% were oral, pharyngeal and cutaneous lesions of Kaposi's sarcoma; 8% were rapidly enlarging neck masses due to Burkitt's lymphoma; 31% were oral, pharyngeal, laryngeal and esophageal candidal lesions; 22% were chronic cough and shortness of breath due to infection with *Pneumocystis carinii* or *Mycobacterium avium-intracellulare*, and 4% were labial or oral lesions of herpes simplex. Some patients also had serous otitis, acute mastoiditis, sensorineural hearing loss, parotid mass, sinusitis, emergent airway obstruction, dysphagia or squamous cell carcinoma. Cervical lymphadenopathy was almost a universal finding.

The lymphadenopathy syndrome or "gay lymph node syndrome" warrants consideration because it can present as a neck mass, recurrent pharyngitis or tonsillar hypertrophy and because it is either a prodrome to AIDS or an alternative phenotypic response to the causative agent of AIDS. The lymphadenopathy syndrome is similar to AIDS in both the laboratory findings (mean helper-to-suppressor cell ratio of

0.7) and the constitutional symptoms of fever, night sweats and weight loss. The adenopathy is diffuse, with the posterior cervical chain being the most commonly involved. Lymph node biopsy is being done more frequently because of the appreciation of a purely lymphadenopathic presentation of Kaposi's sarcoma. The biopsy specimens usually show only follicular hyperplasia. Of the 200 patients with lymphadenopathy syndrome followed by Abrams and co-workers, AIDS has developed in eight (D. Abrams, MD, oral communication, August 1984).

The etiologic agent has not been conclusively identified but it is probably viral. As yet there is no single specific diagnostic laboratory test, including the determination of the helper-suppressor ratio. Currently, much of the therapy is specifically directed against the malignant lesion or opportunistic infections. While antibiotics remain a mainstay of treatment, surgical drainage of otitis and sinusitis is helpful in recalcitrant cases, not unlike the management of infection in the preantibiotic era.

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## Auditory Brain-Stem Evoked Response Measurement in Infants

THERE IS universal agreement that identifying hearing loss as early as possible enhances the rehabilitative possibilities for an infant with hearing loss. The auditory brain-stem evoked response to click stimuli provides an objective measure of the integrity of the peripheral auditory system and is one well-established procedure by which screening for hearing loss at birth may be accomplished. There are predictable differences in the morphologic characteristics of the infant auditory brain-stem evoked response compared with those in an adult with normal hearing. However, it is possible to identify a clearly replicable waveform at intensity levels near the threshold of hearing. A newborn at risk for hearing loss can be identified by results of auditory brain-stem evoked response showing one of several aberrant findings:

- Absence of an identifiable response at any intensity level.
- Absence of a replicable response at low-intensity levels or
- Increased latencies in one or more of the classic waves (I through V) identifiable in the auditory brain-stem evoked response at high-intensity levels.

Interpretation of results of auditory brain-stem evoked response from a newborn can be complicated by such variables as gestational age of the infant; middle or external ear anomalies, or acoustic stimulus variables, such as click repetition rates, frequency components of the signal and signal duration.

False-positive and false-negative error rates with the auditory brain-stem evoked response procedure among neonates

have not been established, but all reports are unanimous in suggesting that follow-up audiologic evaluations of infants not meeting the screening criteria are mandatory in the first three to four months following discharge. Interpretation to the parents of the consequences of a failure to evoke the auditory brain-stem response in their newborn must be made with caution so they do not assume "deafness" on the basis of such a screening.

Finally, certain types of hearing loss escape identification at birth using this procedure. Therefore, infants whose history or physical findings place them at risk for hearing loss should be examined during the first few months of life regardless of the findings of an auditory brain-stem evoked response at birth.

The integrity of an infant's peripheral auditory system can be evaluated systematically in the first few months of life. Infants at risk for hearing loss should be referred to practitioners experienced in evaluating this disorder. There is no justification for "waiting and watching" the development of an infant until the age of two to three years before referring the child for audiologic evaluation including auditory brain-stem evoked response testing.

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### Skin Tests or RAST—Current Concepts

CORRECTLY DONE skin tests (such as serial dilution titration or its equivalent) and the radioallergosorbent test (RAST) both detect IgE antibody with a high degree of accuracy and reproducibility, and both supply information of a quasi-quantitative type. The results of both types of tests generally correlate well with a patient's history and with the signs and symptoms of specific allergens tested. However, the radioallergosorbent test is generally conceded to be somewhat less sensitive than skin tests.

Both RAST and serial dilution titration can be used as the basis for efficient and effective immunotherapy. When RAST values are relied on, a skin test should always be done, using the indicated initial dilution of allergen, before a patient is given a desensitization series.

Skin tests are recognized as superior to RAST in testing for sensitivity to penicillin and Hymenoptera allergens. Skin test results are usually available in about 20 minutes whereas RAST results generally take about two days.

RAST is preferable when generalized dermatologic problems exist or when dermatographia is a problem. The economic factor usually favors the use of skin testing over RAST.

In summary, both serial dilution titration skin testing or its equivalent and RAST are reliable methods for assaying IgE-mediated allergens. Skin testing is generally accepted as more sensitive and economical at present. RAST is highly accurate and the method continues to be refined. It is reliable and most helpful when dermatologic problems or other specific situations make skin testing undesirable. When using either method, it is essential that testing be closely monitored

by an allergist who is qualified to judge whether the test results correlate well with a careful history and observable signs and symptoms.

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### New Approaches to Treatment in Glottic, Subglottic and Tracheal Stenosis

LARYNGOTRACHEAL STENOSIS has long been a difficult management problem for which there is no simple solution. Although it may be congenital, most of the cases we see are acquired. This is due to the increased use of prolonged intubation for mechanical ventilation and the increased incidence of vehicular trauma to the anterior neck.

Endoscopic repair of laryngotracheal stenosis decreases morbidity and mortality. There are patients who simply will not tolerate resection of a tracheal stricture when the risk of morbidity may be up to 20%. In addition, the voice is better after endoscopic procedures than after laryngofissure and the possibility of a later open operation is not jeopardized by initial endoscopic attempts at repair. Dilatation in our experience does not work well unless the scar is so thin that it is almost a mucosa-on-mucosa stenosis.

In a group of 19 patients seen at the University of California, San Francisco, 8 of 9 (89%) cases of posterior glottic stenosis and 9 of 10 (90%) cases of subglottic or tracheal stenosis were successfully treated. These patients were relieved of their shortness of breath and the cannula was removed if they had had a tracheotomy. This was accomplished in most patients with one or two procedures. We were not successful in cases of posterior stenosis if the cricoarytenoid joints were frozen nor in cases of subglottic or tracheal stenosis if the lesion was much longer than 1 cm. The endoscopic technique has been used effectively in a patient with a tracheal lesion that was only 2 cm above the carina.

Glottic stenosis is either anterior or posterior or it can be total. Endoscopic treatment of anterior glottic stenosis is best done with laser and endoscopic Teflon Keel placement. Posterior glottic stenosis is usually due to prolonged intubation and, when the scar completely immobilizes the arytenoids, it can cause apparent bilateral vocal cord paralysis. If a scar band has a mucosa-lined sinus behind it (usually only seen by direct laryngoscopy) it can often be handled by simple laser division. If a scar completely obliterates the posterior commissure and is subglottic or tracheal, then a micro-trapdoor mucosal flap is created to cover the endoscopically removed scar tissue. This is done by excavating the scar starting at the superior aspect of the stenosis in one quadrant. The preserved overlying mucosa is then incised along the lateral aspects, creating an inferiorly based flap. No suturing of the